View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by Università del Salento: ESE - Salento University Publis

DOI 10.1285/i15910725v42p129
http: siba-ese.unisalento.it - © 2020 Università del Salento

GIULIANA MARLETTA[1], ANDREA LOMBARDO[1]

[1] University of Catania, Department of Biological, Geological and Environmental Sciences - 95124 Catania, Italy
e-mail: *giuliana.marletta@phd.unict.it*

A NEW RECORD OF THE LIVE SHARKSUCKER, *ECHENEIS NAUCRATES* LINNAEUS, 1758 (PERCIFORMES, ECHENEIDAE), IN THE MEDITERRANEAN SEA

SUMMARY

The present note represents a new record of the live sharksucker, *Echeneis naucrates*, in the Mediterranean Sea, after the last report of this species which dates back to 2016. The *E. naucrates* specimen has been seen during a scuba dive in an area located along the Ionian coast of Sicily (Italy). The specimen probably was in search of a host and it tried repeatedly to attach himself to the divers. Therefore, this is the first Mediterranean record in which the interaction of this species in its natural habitat has been observed, since, in the previous reports, the specimens had always been caught by nets. Finally, this note reports for the second time in the Mediterranean Sea, the presence of this oceanic species in an area with brackish waters.

INTRODUCTION

Disc fishes of the family Echeneidae (suckerfish) are organisms which use their sucking device to attach themselves to large marine animals (Battaglia *et al.*, 2015). This is a symbiotic association which assures several benefits to suckerfish such as transportation, protection from predators, increased courtship/reproduction potential and greater feeding opportunities (Fertl and Landry, 1999, 2002; Silva and Sazima, 2003). Also their hosts obtain some advantages, since suckerfish feed on parasites and ingest scraps of food, faeces, small nekton and zooplankton, cleaning their hosts from sloughing epidermal tissue (Sazima *et al.*, 1999; Fertl and Landry, 2002; Williams *et al.*, 2003). Suckerfish' hosts are usually large-bodied vertebrates such as marine mammals, elasmobranchs, turtles and teleosts (Cressey and

Lachner, 1970; Battaglia *et al.*, 2015). The Suckerfish' hitchhiking behaviour ranges from facultative to obligate (Bachman *et al.*, 2018): some species (e.g. *Echeneis naucrates* Linnaeus, 1758) attach to a diverse array of hosts, whereas others show a preference for specific hosts (Strasburg, 1964; Sazima and Grossman, 2006).

In the Mediterranean Sea, five Echeneidae species have been reported (Battaglia *et al.*, 2015): one belonging to the genus *Echeneis* Linnaeus, 1758 (*E. naucrates*) and four belonging to the genus *Remora* Gill, 1862. The live sharksucker, *E. naucrates* is the most abundant remora in warm waters, occurring both near and far from the coast (Cervignón *et al.*, 1992), often free-swimming in shallow inshore areas and around coral reefs (Smith, 1997). It is found at depths ranging from 20 to 50 m, where coral reefs are located (Kowerska, 2006) and it commonly swims in groups (Akyol and Baylik, 2007).

E. naucrates is distributed worldwide except on the Pacific American coast (Lachner, 1986). South of the Strait of Gibraltar, this species is known from Morocco (Lloris and Rucabado, 1998), Mauritania and Senegal (Priol, 1937), to the Gulf of Guinea (Blache *et al.*, 1970). It is considered rather rare in the northern Mediterranean but common in southern and eastern areas (Lachner, 1986; Golani, 2005). The species was reported from southern Italy (Trois, 1893; Tortonese, 1973; Insacco *et al.*, 2015-2016), the southeastern Adriatic Sea (Skaramuca *et al.*, 2009), and off Greece (Papaconstantinou, 1988). Southward, *E. naucrates* was reported off the Maghreb shores of Morocco (Lloris and Rucabado, 1998) and Tunisia (Akyol and Baylik, 2007; Akyol and Capapé, 2015; Rafrafi-Nouira *et al.*, 2015), to the coast of Libya (Al-Hassan and El-Silini, 1999). Eastward, *E. naucrates* has been recorded off Kastellorison Island (Greece), near the Turkish southern Aegean coast (Kaspiris and Ondrias, 1984), the coast of Israel (Ben-Tuvia, 1978; Fischthal, 1982), and in Syrian waters (Saad, 2005). In the Mediterranean Sea, the most recent report of this species dates back to 2016, when a *E. naucrates* specimen was caught through a trammel net at a depth of 10 m in the area of Marzamemi (Insacco *et al.*, 2015-2016). Therefore, the aim of this short note is to report a new record of this species in the Mediterranean Sea and to give further data on its behaviour.

MATERIAL AND METHODS

A specimen of *E. naucrates* has been observed during a scuba diving conducted by the authors at about 9-11:30 a.m. in the area of Santa Maria La Scala (37°37′2″N, 15°10′20″E), located along the central-eastern sector of Sicily (Italy). In this site there is a steep coastal slope called Timpa which

extends for 6 km. In this area, due to its natural heritage, there is an Oriented Natural Reserve called "La Timpa" and a Site of Community Importance named "Timpa of Acireale". The morphology of Timpa is reflected in the seafloor, which presents a steep scarp. Moreover, in this site there are several springs due to the flow of freshwater from the Etna to the sea (Catra *et al.*, 2006).

The specimen was photographed with an Olympus TG-4 underwater camera and then, was identified according to Louisy (2015), Akyol and Capapé (2015) and the web site FishBase (Froese *et al.*, 2019).

RESULTS

The specimen of *E. naucrates* (Fig. 1) has been observed on 17 July 2020, at a depth of 9 m. It was identified according to the features reported by Louisy (2015), Akyol and Capapé (2015) and FishBase (Froese *et al.*, 2019): body fusiform and elongated with a black band edged with white lines, pectoral fin pointed, oval cephalic sucker disc extended until the half of the pectoral fin, usually with from 20 to 28 lamellae. In the photographed specimen 21 lamellae have been counted (Fig. 1.D). The tail is pointed, the pectoral and ventral fins are dark, and the belly is grey-brownish. The dorsal and anal fins are black and are outlined with a lighter shade. The specimen measured approximately 30 cm.

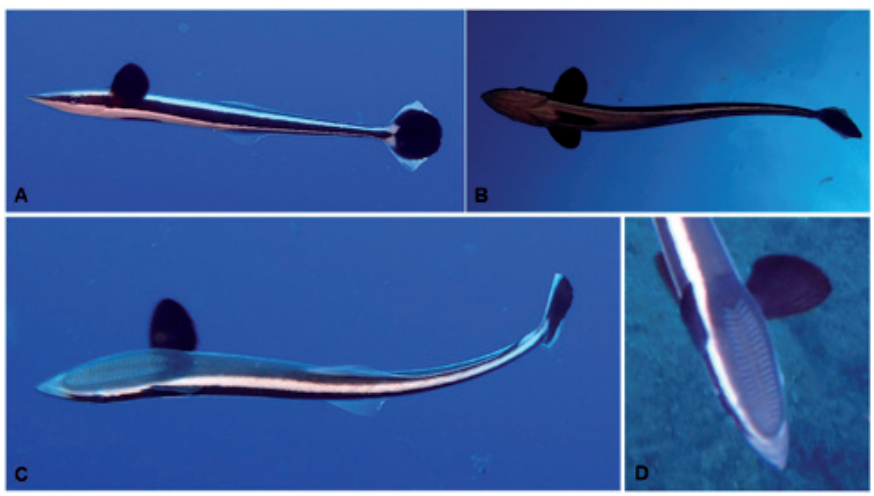

Fig. 1. A) *Echeneis naucrates* specimen in lateral-left view; B) Ventral view of the specimen; C) Dorsal view of the specimen; D) Detail of the cephalic sucker disc. (Photos of A. Lombardo).

DISCUSSION AND CONCLUSIONS

This note reports a new record of *E. naucrates* in the Mediterranean Sea, after the last report of this species which dates back to 2016 (Insacco *et al.*, 2015-2016). The observed specimen was swimming, looking for a host, and, apparently, it was trying to attach to the body of divers. Indeed, this attitude has also been documented by Andrade (2007). However, the bubbles produced by the aqualungs probably scared the individual, which after a few attempts, drifted away.

E. naucrates has usually been reported in the bathymetric range of 20-50 m (Kowerska, 2006). Instead, more recently, *E. naucrates* has also been found within a range of depth of 10 m. In fact, it has been documented at 2 m by Akyol and Baylik (2007), at 0.5 m by Skaramuca *et al.* (2009), at 3 m by Akyol and Capapé (2015), at 10 m by Insacco *et al.* (2015-2016) and finally at 9 m of depth (present work). Moreover, this note constitutes the first report of *E. naucrates* in the Mediterranean, in which the interaction of this species in its natural habitat has been observed. Indeed, in the previous Mediterranean reports, the specimens had always been caught by nets, thus, the *E. naucrates*'s behaviour could not be observed. Furthermore, this note reports for the second time in the Mediterranean Sea, the presence of this oceanic species in an area with brackish waters, after the report of the live sharksucker in the Beymelek Lagoon, in Turkey (Akyol and Baylik, 2007).

REFERENCES

Akyol O., Balik I., 2007 – Occurrence of the live sharksucker, *Echeneis naucrates* (Echeneidae) in the Beymelek Lagoon, Turkey (eastern Mediterranean). *Cybium* **31**: 487-488.

Akyol O., Capapé. C., 2015 – On the occurrence of live sharksucker, *Echeneis naucrates* Linnaeus, 1758 (Perciformes: Echeneidae), in Turkish waters (Eastern Mediterranean). *Journal of Applied Ichthyology* **31**: 744-746. doi:10.1111/jai.12775

Al-Hassan L.A.J., El-Silini O.A., 1999 – Check-list of bony fishes collected from the Mediterranean coast of Bengazi, Libya. *Revista de Biología Marina y Oceanografía* **34**: 291-301.

Andrade Á.B., 2007 – *Echeneis naucrates* (Linnaeus) (Perciformes, Echeneidae), unusual interaction with a diver. *Pan-American Journal of Aquatic Sciences* **2(1)**: I.

Battaglia P., Potoschi A., Valastro M., Andaloro F., Romeo T., 2016 – Age, growth, biological and ecological aspects of *Remora osteochir* (Echeneidae) in the Mediterranean Sea. *Journal of the Marine Biological Association of the United Kingdom* **96**: 639-645.

Bachman B.A., Kraus R., Peterson C.T., Grubbs R.D., Peters E.C., 2018 – Growth and reproduction of *Echeneis naucrates* from the eastern Gulf of Mexico. *Journal of Fish Biology* **93**: 755-758. https://doi.org/10.1111/jfb.13790

Ben-Tuvia A., 1978 – Immigration of fishes through the Suez Canal. *Fishery Bulletin* **76**: 249-255.

Blache J., Cadenat J., Stauch A., 1970 – *Clé de détermination des poissons de mer signalés dans l'Atlantique oriental (entre le 20ième parallele N et le 15ième parallèle S). Fauna Tropical XVIII.* Office de la recherche scientifique et technique Outre-Mer, Paris, 18: 479 pp.

Catra M., Giaccone T., Giardina S., Nicastro A., 2006 – Il patrimonio naturale marino bentonico della Timpa di Acireale (Catania). *Bolletino dell'Accademia Gioenia di Scienze Naturali* **39(366)**: 129-158.

Cervignón F., Cipriani R., Fischer W., Garibaldi L., Hendrick M., Lemus A.J., Marquez J., Poutiers J.M., Robania G., Rodriguez B., 1992 – *Fichas FAO de identificación de especies para los fines de la pesca. Guía de campo de las especies comerciales marinas y de aquas salobres de la costa septentrional de Sur América*. Rome: FAO. Preparado con el financiamento de la Comisión de Comunidades Europeas y de NORAD: 513 pp.

Cressey R., Lachner E., 1970 – The parasitic copepod diet and life history of diskfishes (Echeneidae). *Copeia* **2**: 310-318.

Fertl D., Landry A.M.JR., 1999 – Sharksucker (*Echeneis naucrates*) on a bottlenose dolphin (*Tursiops truncatus*) and a review of other cetacean-remora associations. *Marine Mammal Science* **15**: 859-863.

Fertl D., Landry A.M.JR., 2002 – Remoras. In: Perrin W.F., Würsig B., Thewissen J.G.M. (Eds). *Encyclopedia of Marine Mammals*. Academic Press, New York: pp. 1013-1015.

Fischthal J.H., 1982 – Additional records of digenetic trematodes of marine fishes from Israel's Mediterranean coast. *Proceedings of the Helminthological Society of Washington* **49**: 34-44.

Froese R., Pauly D. Editors. 2019 – FishBase. World Wide Web electronic publication. www.fishbase.org, (12/2019).

Golani D., 2005 – Check-list of the Mediterranean fishes of Israel. *Zootaxa* **947**: 1-90.

Insacco G., Amato A., Zava B., 2015-2016 – Records of live sharksucker *Echeneis naucrates* Linnaeus, 1758 in Tyrrhenian and Ionian Seas (Osteichthyes, Echeneidae). *Natura Rerum* **4**: 49-51.

Kaspiris P., Ondrias J., 1984 – Some rare fishes from the Greek seawaters. *Institut Za Oceanografiju I Ribarstvo, Split* **61**: 1-4.

Kowerska A., 2006 – *Echeneis naucrates* (on-line), Animal Diversity Web. Accessed 28/07/2020 at http://animaldiversity.ummz.umich.edu.

Lachner E.A., 1986 – Echeneididae. In: Whitehead P. J. P., Bauchot M.-L., Hureau J.-C., Nielsen J., Tortonese E. (Eds.) *Fishes of the north-eastern Atlantic and the Mediterranean*, Vol. III. UNESCO, Paris: pp. 1329-1334.

Lloris D., Rucabado J., 1998 – *Guide FAO d'identification des espèces pour les besoins de la pêche. Guide d'identification des ressources marines vivantes pour le Maroc.* FAO, Rome: 263 pp.

Louisy P., 2015 – Guide d'identification des poisons marins, Europe et Méditerranée. Editions Ulmer: 512 pp.

Papaconstantinou C., 1988 – *Check-list of marine fishes of Greece. Fauna Graeciae IV*. National Centre for Marine Research, Athens: 257 pp.

Priol E.-P., 1937 – Note sur *Echeneis naucrates* Linné. *Travaux de l'Institut des Pêches Maritimes* **10**: 371-378.

Rafrafi-Nouira S., Reynaud C., Boumaïza M., El Kamel-Moutalibi O., Capapé C., 2015 – Unusual Captures of Teleost Species from the Northern Coast of Tunisia (central Mediterranean). *Journal of Ichthyology* **55(3)**: 337-345. https://doi.org/10.1134/S003294521503011X

Saad A., 2005 – Check-list of bony fish collected from the coast of Syria. *Turkish Journal of Fisheries and Aquatic Sciences* **5**: 99-106.

Sazima I., Moura R.L., Rodrigues M.C.M., 1999 – Juvenile sharksucker, *Echeneis naucrates* (Echeneidae), acting as a stationbased cleaner fish. *Cybium* **23**: 377-380.

Sazima I., Grossman. A., 2006 – Turtle riders: remoras on marine turtles in Southwest Atlantic. *Neotropical Ichthyology* **4**: 123-126.

Silva J.M.JR., Sazima I., 2003 – Whalesuckers and a spinner dolphin bonded for weeks: does host fidelity pay off? *Biota Neotropica* **3(2)**: 1-5.

Skaramuca D., Skaramuca B., Dulcic J., 2009 – Record of a live sharksucker, *Echeneis naucrates* (Osteichthyes: Echeneidae) from the south-eastern Adriatic (Croatian coast). *Marine Biodiversity Records* **2**: e80.

Smith C.L., 1997 – *National Audubon Society Field Guide to Tropical Marine Fishes of the Caribbean, the Gulf of Mexico, Florida, the Bahamas, and Bermuda*. Knopf Publishing Group, New York: 720 pp.

Strasburg D.W., 1964 – Further notes on the identification and biology of echeneid fishes. *Pacific Science* **18**: 51-57.

Tortonese E., 1973 – Les poissons de la famille Echeneididae (rémoras) de la mer Ligure et de la mer Tyrrhénienne. *Revue des Travaux de l'Institut des Peches Maritimes* **37(2)**:197-202.

Trois E.F., 1893 – Sulla comparsa accidentale dell'*Echeneis naucrates* nel Golfo di Venezia. *Atti. R. Instituto Veneto di S.L.A.*, Serie VII, Tomo IV (1892/93), p. 1636.

Williams E.H.Jr., Mignucci-Giannoni A.A., Bunkley-Williams L., Bonde R.K., Self-Sullivan C., Preen A., Cockcroft V.G., 2003 – Echeneid-sirenian associations, with information on sharksucker diet. *Journal of Fish Biology* **63**: 1176-1183.